

Date: Tuesday, 19/08/2008 11:20:51 AM
 User: Julie Lecocq

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 350/355 AS X-TUBE AFT
 Job Number : 41390
 Estimate Number : 12486
 P.O. Number :
 This Issue : 19/08/2008 S.O. No. :
 Prsht Rev. : NC
 First Issue : / / Type : CROSSTUBES
 Previous Run : 41389
 Part Number : D350748201
 Drawing Number : N/A
 Project Number : N/A
 Drawing Revision : D
 Material :
 Due Date : 05/09/2008 Qty: 1 Um: Each
 Written By :
 Checked & Approved By : JUL 08 8.19
 Comment : Est Rev: A New Issue 06-07-05 JLM
 Est Rev: B Update qty of MS21042L5 06-09-12 KJ
 Est Rev C Combined manufacturing 08.04.02 EC verified by:
 DD
 Est Rev:D 08-06-24 revD as per dwg DD verified by:EC

Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

DC

DOCUMENT CONTROL



Comment: Photocopy bluefile & type labels per PPPD350-748-201 CHG001

2.0

D350748241TRN

Crosstube Turning Detail



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)
 CROSSTUBE TURNING DETAIL
 batch B340113 DP 8-10-6

3.0

BENDING

BENDING MACHINE - SKIDTUBES



Comment: BENDING MACHINE
 Bend tube as per Dwg D350-748-241 using CNC bender program D350A and Folio FT

4.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

5.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1
 1-Remove all marks from tube within limits of D350-748-241
 2-Drill Tube as per Dwg D350-748-241 Using DT8876 Drill Jigs,
 Set-up drill table as per QSI 010

FT 08-10-07

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 19/08/2008 11:20:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT

Job Number: 41390

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

3-Deburr

Avm 8-10-7

4-Engrave Part # and Batch # as per Dwg D350-748-241

ET 08-10-07

6.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

S 08/10/07 @

7.0

OUTSIDE SERV.10

OUTSIDE SERVICES -skids



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: *7326*

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possible Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

C208/10/07
①

8.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

P 08/10/07
①

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S 08/10/23 @

10.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

2-Paint Outside of Tube as per Dart QSI 005 4.2

ET 08-10-27

11.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

S 08/10/28 @

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 19/08/2008 11:20:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT

Job Number: 41390

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2401 f(s)/Unit Total : 1.2401 f(s)

Abrasion Strip 7.10" long x2

Batch: 37667

RT 08-10-28

13.0

ALS41032225

Insert



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Insert

Batch: 100621

RT 08-10-28

14.0

AN960JD10

Washer



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Washer

Batch: 109059

RT 08-10-28

15.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: 107501

RT 08-10-28

16.0

MS27039110

Screw



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Screw

Batch: 18836

RT 08-10-28

17.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire Insert, then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-241 & QSI 035.

3-Install supports Using Dt8876 as per Dwg D350-748-241, Torque to 60-80 IN-LBS

} RT 08 10 28

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 19/08/2008 11:20:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT

Job Number: 41390

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

18.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

SS 08/10/28 (X)

19.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Pick Packing Kit

20.0

D35001

Saddle



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
350 SADDLE
Batch: 41673

SS 08/10/28 (X)

21.0

D35021

Support



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)
SUPPORT
Batch: 35783

RT 08-10-28

22.0

D35011

Bushing



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)
BUSHING
Batch: 35316

SS 08/10/28 (X)

23.0

AN46A

Bolt



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)
Bolt
Batch: M68558

SS 08/10/28 (X)

24.0

AN441A

bolt



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)
bolt
Batch: M69061

SS 08/10/28 (X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 19/08/2008 11:20:52 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE AFT

Job Number: 41390

Part Number: D350748201

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Bolt

Batch:

M109061

SS 08/10/28 (X)

26.0

AN960JD416

Washer



Comment: Qty.: 32.0000 Each(s)/Unit Total: 32.0000 Each(s)

Washer

Batch:

M108827

SS 08/10/28 (X)

27.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total: 8.0000 Each(s)

Washer

Batch:

M109059

SS 08/10/28 (X)

28.0

MS21042L4

Nut



Comment: Qty.: 24.0000 Each(s)/Unit Total: 24.0000 Each(s)

Nut

Batch:

M108145

SS 08/10/28 (X)

29.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s)

Nut

Batch:

M108827

SS 08/10/28 (X)

30.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

SS 08/10/29 (X)

31.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-201

Location:

PPP Rev:

A

SS 08/10/29 (X)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

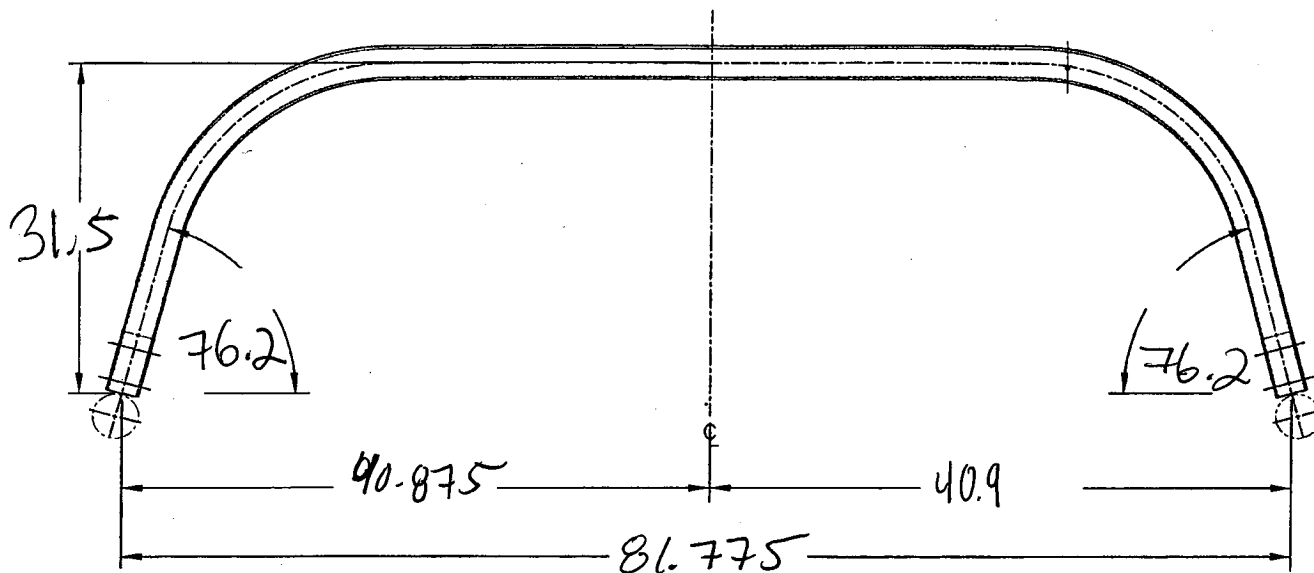
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	41390
Description: Crosstube High Aft (AS350/355)		Part Number:	D350-748-201
Inspection Dwg: D350-748-241 Rev: D		Page 1 of 1	

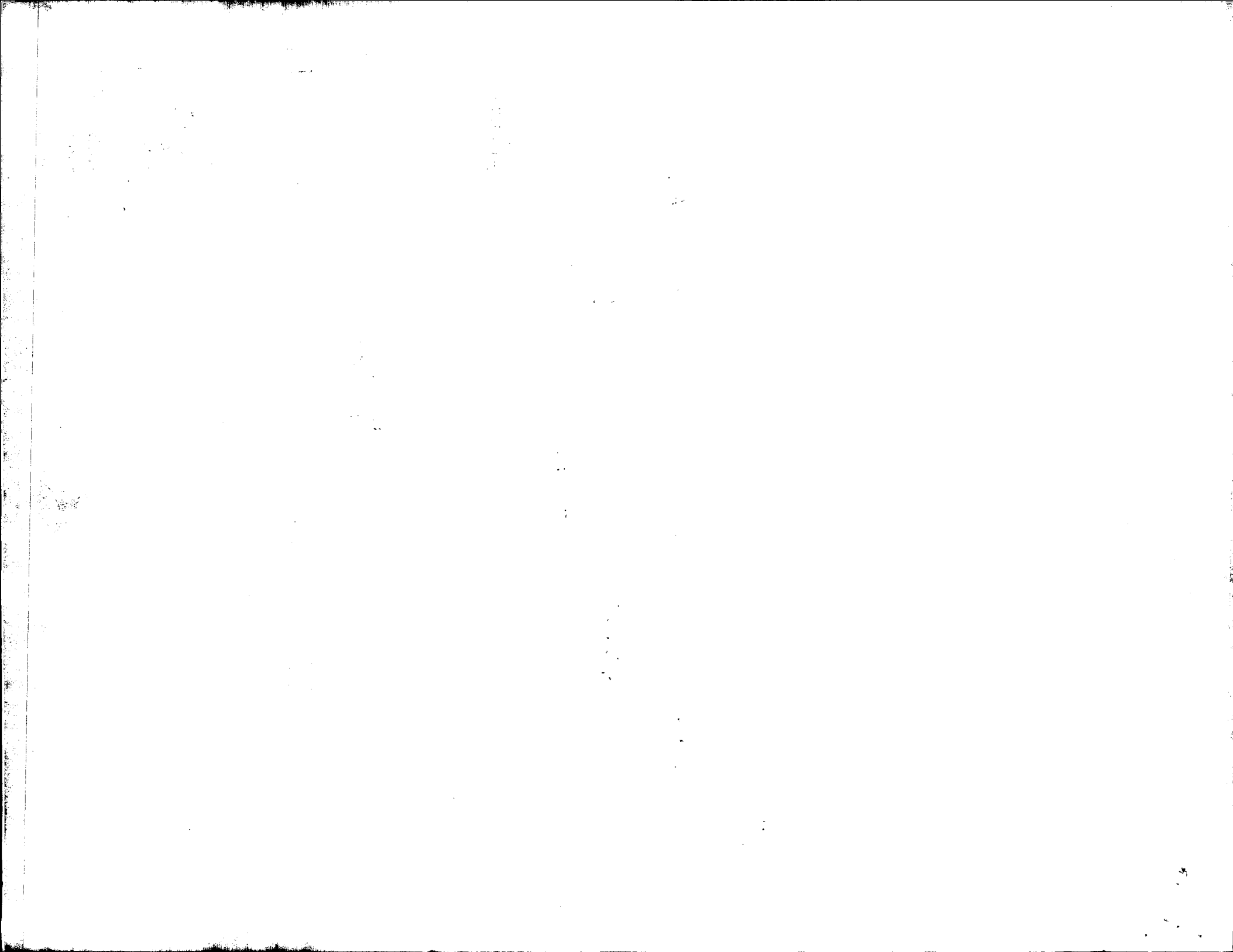
Required Dimension	Min	Max
Height	31.22	31.48
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06



Comments

QC15 Inspection	@SI 042
Date	06/10/07

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	<i>[Signature]</i>





DESIGN <i>qp</i>	DRAWN BY <i>qp</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>HH</i>	APPROVED <i>HH</i>	DRAWING NO. D350-748-241	REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE NTS
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6018-125 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.	

RELEASED

06.10.31 *HH*

QTY	P/N	DESCRIPTION
X	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
1	D6018-125	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

D350-748-141 CROSSTUBE:

- 1) MATERIAL: MANUFACTURED FROM D6018-125 OR D6015-125
FINISHED LENGTH = 122.70±0.06
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR Ø0.297 HOLE.

RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
41310

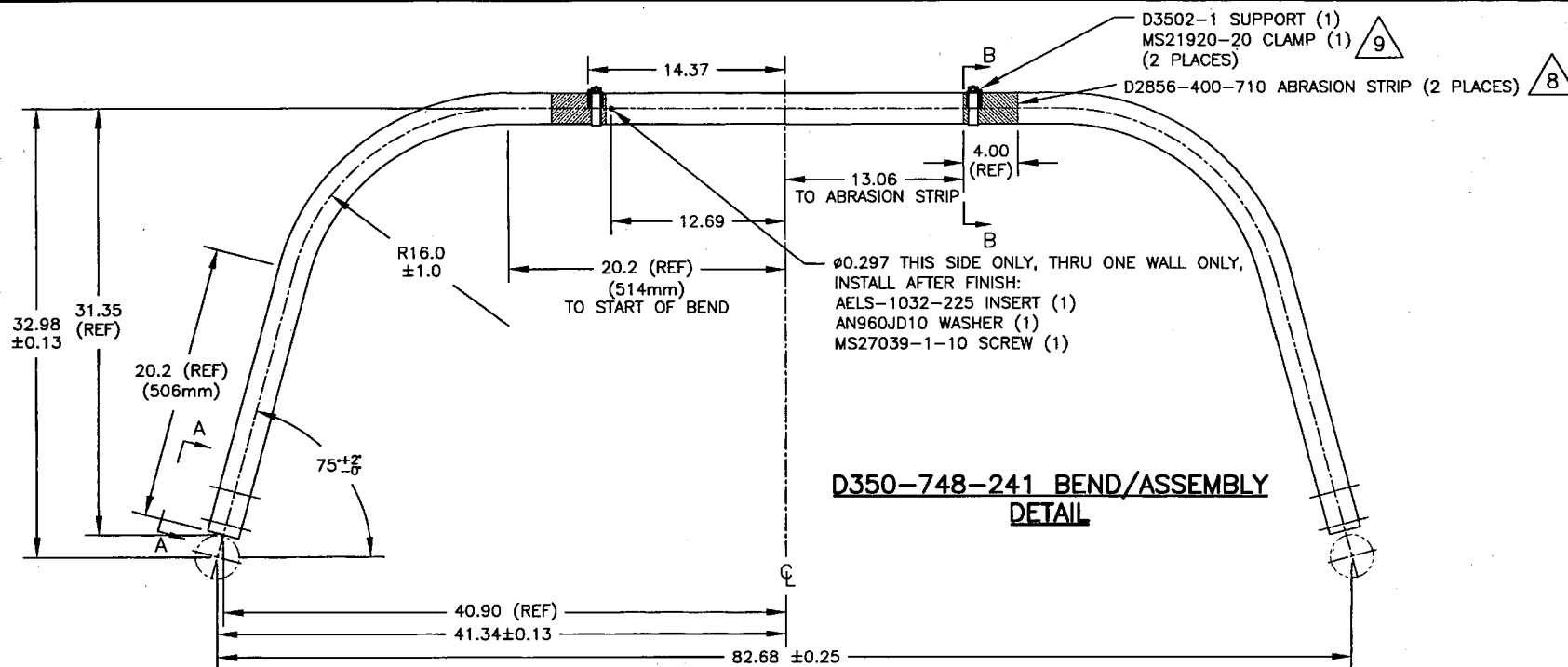
UNDER REVIEW

07.02/16 *HH*

CUT OFF, REDUCED
07.07.22

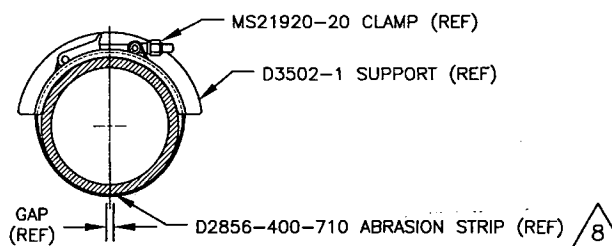
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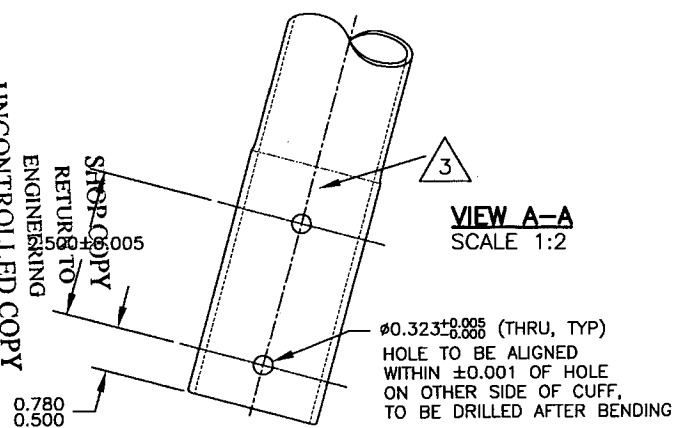


**D350-748-241 BEND/ASSEMBLY
DETAIL**

**SECTION B-B
SCALE 1:2**



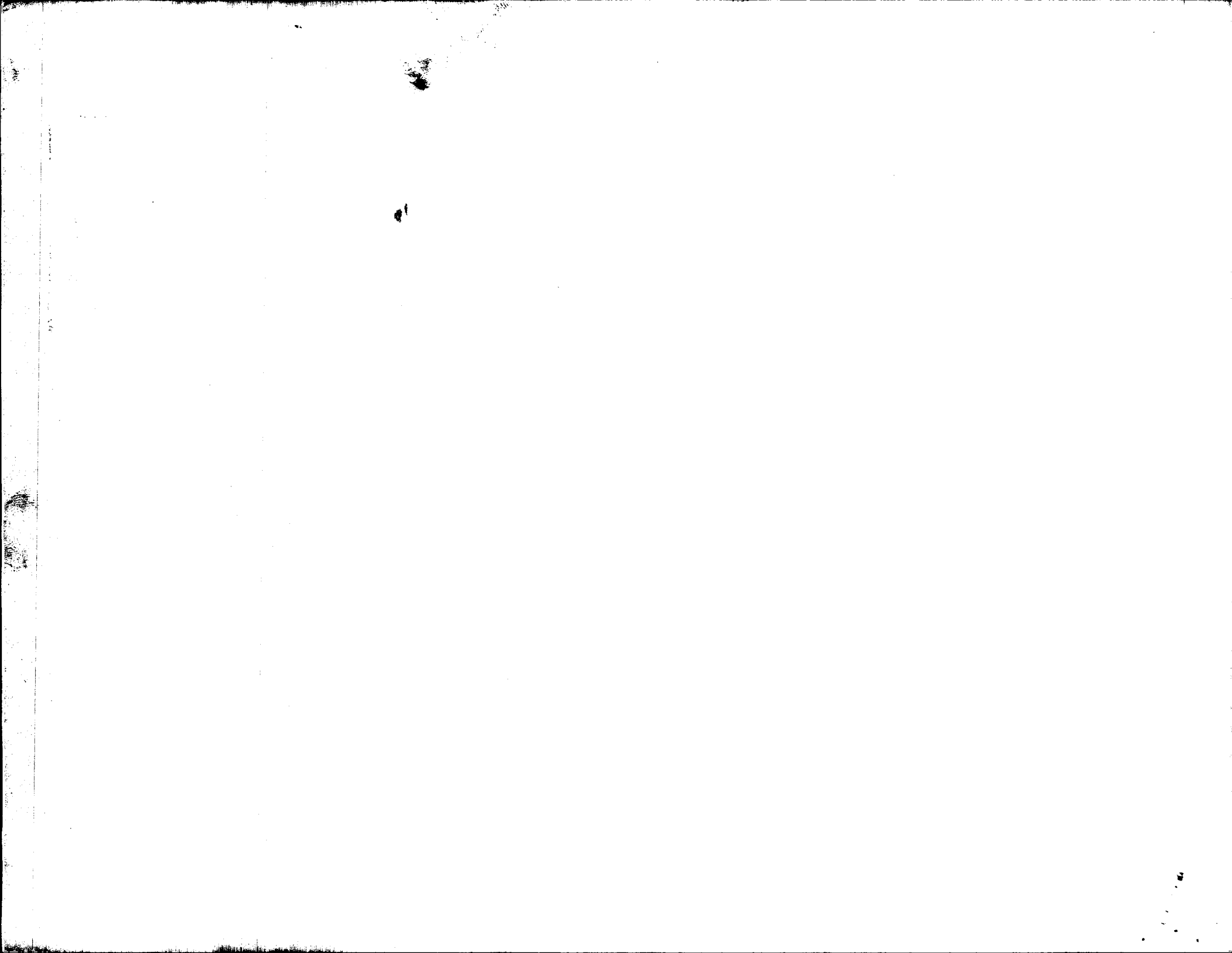
**VIEW A-A
SCALE 1:2**

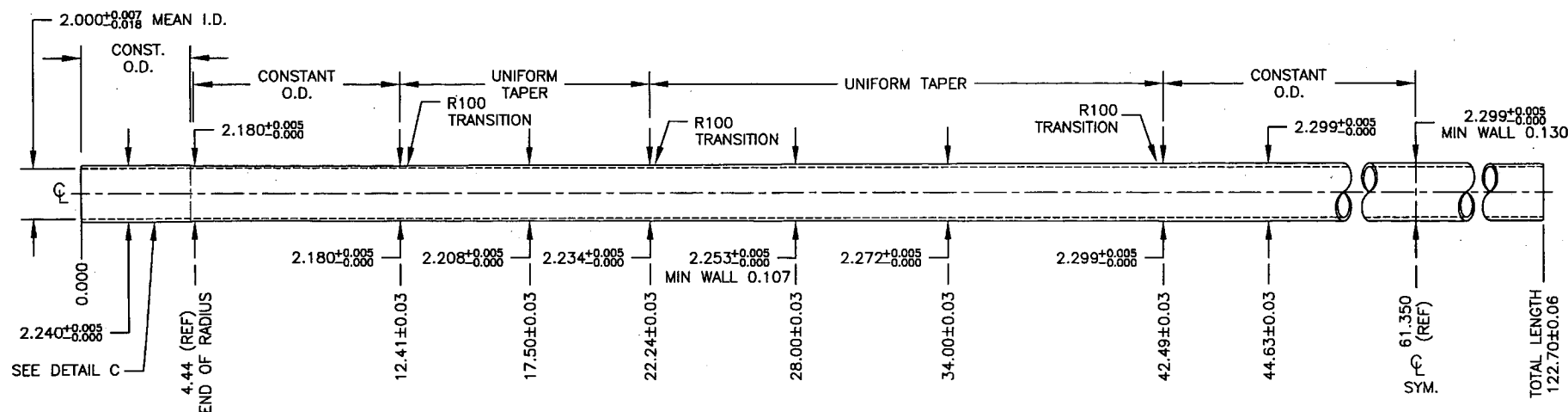


NO. 21510
WORK ORDER
WITHOUT NOTICE
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
ENGINEERING
RETURN TO
STOP COPY
500 ± 0.005

UNDER REVIEW
07.02/16/11
06.10.31
RELEASED
06.10.31

COPYRIGHT © 2006 BY DART AEROSPACE LTD.		DESIGN	q2	DRAWN BY	q2	DART	DART AEROSPACE LTD. WARRICKSLEY, ONTARIO, CANADA
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		DATE	06.10.31			D350-748-241	SHEET 2 OF 3
						TITLE	SCALE
						CROSSTUBE (AS 350/355 HI AFT)	1:8



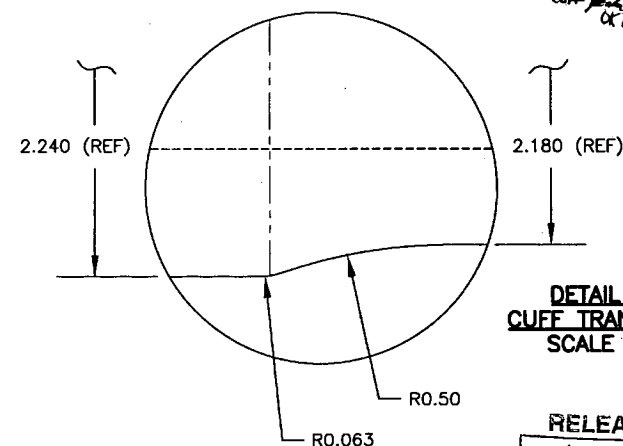
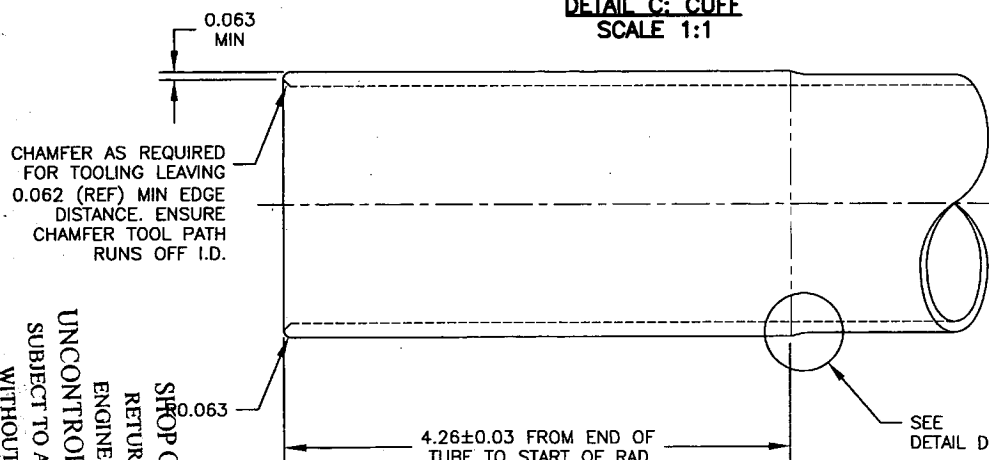


D350-748-241 MACHINING DETAIL

UNDER REVIEW

07.02/16 JK
CUFF TOOL PATHES
OK 07.20.22

DETAIL C: CUFF SCALE 1:1



DETAIL D: CUFF TRANSITION SCALE 9:1

RELEASED

06.10.31

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DESIGN	q7	DRAWN BY	q7	DART	DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA
CHECKED	#	APPROVED	#	DRAWING NO. D350-748-241	REV. D
DATE	06.10.31	TITLE	CROSSTUBE (AS 350/355 HI AFT)	SHEET 3 OF 3	SCALE 1:4

WORK ORDER
NO 44390

STOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE

**CERTIFICATE OF
CONFORMANCE**

**CADORATH PLATING CO. LTD.
2150 LOGAN AVENUE
WINNIPEG, MANITOBA R2J-0J1**

DATE: Oct-17-2008

CONSIGNED TO: Dart Aerospace Ltd.
1270 Aberdeen St.
Hawksbury, ON K6A 1K7

W/O #: 80585
INVOICE #: 41382

**CONTRACT OR
PURCHASE ORDER #** 00007326

DESCRIPTION: SKID

QTY 1

P/N # D350-748-201

S/N # B41390

**MPI IAW ASTM-E-1444. CADMIUM PLATE IAW AMS-QQ-P-416B
TYPE 2 CLASS 2. BAKE HEAT CHARTS #9725 AND 9741.**

S
09/10/23

**CERTIFICATE: I certify that the items indicated here on have
been inspected and tested and conform to all specifications
and requirements detailed on the contract or purchase order.**

Approved Inspector:



37

Date: Tuesday, 19/08/2008 11:20:51 AM
User: Julie Lecocq

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 41390
Estimate Number : 12486
P.O. Number :
This Issue : 19/08/2008 S.O. No. :
Prsht Rev. : NC
First Issue : // Type : CROSSTUBES
Previous Run : 41389
Drawing Name : 350/355 AS X-TUBE AFT
Part Number : D350748201
Drawing Number : N/A
Project Number : N/A
Drawing Revision : D
Material :
Due Date : 05/09/2008 Qty: 1 Um: Each

Written By :
Checked & Approved By : JUD 08-8-19
Comment : Est Rev: A New Issue 06-07-05 JLM

Est Rev: B Update qty of MS21042L5 06-09-12 KJ
Est Rev C Combined manufacturing 08.04.02 EC verified by:
DD
Est Rev: D 08-06-24 revD as per dwg DD verified by: EC

REFERENCE ONLY

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



JUD 08-8-28



Comment: Photocopy bluefile & type labels per PPPD350-748-201 CHG001

2.0 D350748241TRN Crosstube Turning Detail



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)
CROSSTUBE TURNING DETAIL
batch _____

3.0 BENDING BENDING MACHINE - SKIDTUBES



Comment: BENDING MACHINE
Bend tube as per Dwg D350-748-241 using CNC bender program D350A and Folio FT _____

4.0 QC15 DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

5.0 CROSSTUBES CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1
1-Remove all marks from tube within limits of D350-748-241

2-Drill Tube as per Dwg D350-748-241 Using DT8876 Drill Jigs,
Set-up drill table as per QSI 010